



**MANAGEMENT AND TECHNICAL RESOURCES, INC.**

June 25, 1999

10092827



*Via Facsimile and Airborne*

Mr. Steve Spurlin  
On-Scene Coordinator (OSC)  
U. S. Environmental Protection Agency, Region IV  
Emergency Response and Removal Branch  
61 Forsyth Street  
Atlanta, GA 30303

**RE: Parking Garage Elevator Installation  
South Carolina Electric and Gas Company  
Calhoun Park Area Site  
Charleston, South Carolina**

Dear Mr. Spurlin:

On behalf of South Carolina Electric and Gas Company (SCE&G), this letter outlines plans for the isolation of the intermediate groundwater zone during construction of two elevator lift casings to be installed within the parking garage at the Calhoun Park Area (CPA) Site.

**DESCRIPTION OF PROPOSED INSTALLATION**

Construction of the elevators will involve the installation of two adjacent lift casings (i.e., one casing per elevator lift). The proposed location of the parking garage elevators is identified on Figure 1. The plan view and cross-sectional view of these elevator lift casings are provided as insets on Figure 1. Each elevator lift requires installation of 20-inch diameter steel casings to 55 feet below ground surface (bgs). Based on the attached environmental (FDGTI) and geotechnical (SM&E) boring logs for GT-03, located within 50 feet of the proposed elevator locations, the lift casings will extend through the upper clay layer and into the intermediate groundwater zone. The location of boring GT-03 is identified on Figure 1.

Placement of surface casings is proposed to address mutual concerns of SCE&G and the regulatory agencies for protection of the intermediate groundwater zone. Specifically,

installation of surface casings is intended to isolate potentially impacted shallow groundwater and prevent constituent migration via the elevator lift casing installations. The surface casings will be 24 inches in diameter, constructed of ¼-inch thick steel, and installed to 17 feet bgs, which is a minimum of two feet below the top of the clay layer (refer to cross-section A-A' on Figure 1). The borehole diameter for each surface casing will provide a minimum 2-inch annular space to allow placement of a grout seal. The grout will consist of high solids (30%) bentonite-cement to form an appropriate low permeability seal. The telescoped, double-casing construction method proposed for the shaft installations is similar to that used for monitoring well installations during the CPA Site Remedial Investigation and is consistent with those contained in the U.S. EPA Region IV Environmental Investigations Standard Operating Procedures and Quality Assurance Manual (EISOPQAM, May 1996).

Each 24-inch diameter steel casing will be installed within a boring advanced by rotary methods using a nominal 30-inch diameter bucket bit to advance the borings to the desired total depth of 17 feet bgs. Cuttings from the bucket bit will be examined on-site during borehole advancement by a South Carolina registered professional geologist to confirm that the casing will be sealed a minimum of two feet into the clay unit. A bentonite drilling mud will be mixed with potable water and added to the borehole during drilling to provide adequate hydrostatic pressure within the borehole. Upon completion of the borehole into a minimum of two feet of clay, the casing will be placed into the borehole, centered and checked for plumbness prior to grouting.

The casings will be grouted in place using high-solids bentonite grout slurry. At each location, the grout will be mixed and pumped into the annular space between the casing and the borehole wall by the tremie method, starting at the bottom of the borehole to the surface. Drilling liquids displaced from the annular spaces will be contained. A minimum of 24 hours will be allowed for the grout to cure before further drilling to advance the two elevator lift casings.

It is anticipated that the 20-inch diameter steel casings will be advanced to a depth of approximately 55 feet bgs by driving. Cuttings from inside the casing will be removed periodically as it is driven in increments. A drill bit will be used to loosen material within and above the bottom of the casing and a bailer subsequently used to remove the cuttings from within the casing. Water will be added to the casing as it is advanced to provide adequate hydrostatic pressure within the casing and to facilitate the removal of cuttings using the bailer. Each casing will be advanced incrementally in 10-foot sections, and additional casing sections welded in place. Grouting of the annular space between the 20-inch and 24-inch diameter casings will not be conducted.

After the 20-inch casing is installed, a 14-inch diameter Schedule 40 PVC pipe will be installed to accommodate the elevator lift mechanism and the ancillary hoses. The PVC liner pipe will be installed with a plug at the base.

Cuttings and drilling water derived from the installation of the two elevator casing borings will be containerized. Management of soil and drilling water will be conducted consistent with the procedures outlined in the referenced work plan and subsequent communications with the EPA (MTR, June 16, 1999 letter).

#### **MONITORING DURING INSTALLATION ACTIVITIES**

Air monitoring and soil monitoring during the elevator lift casing installation activities will be conducted consistent with the procedures outlined in the "Soil Monitoring Work Plan for the Installation of Piles Associated With Construction of the Parking Garage" (MTR, April 1999).

#### **PROJECT SCHEDULE**

This task will be integrated into the overall schedule following EPA approval of this submittal. It is currently anticipated that the intrusive work associated with the elevator lift casing installations will be initiated upon approval, as soon as logistically feasible to maintain the overall progress of the on-going construction activities. The current construction schedule indicates the protective casings must be installed no later than July 12, 1999.

If you have any questions or require additional information, please contact me at 412-829-9650.

Sincerely,  
**Management and Technical Resources, Inc.**

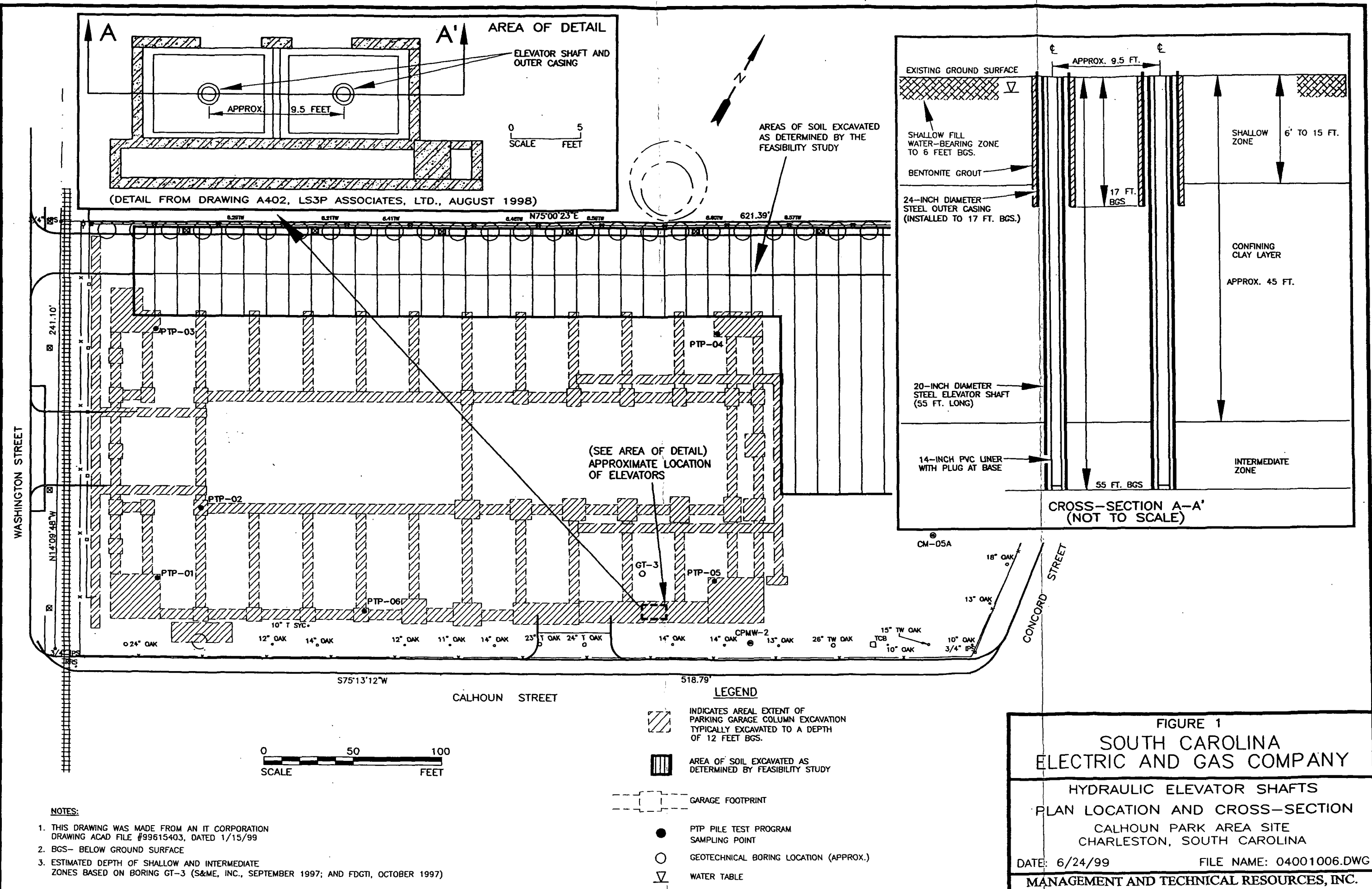


Andrew Contrael  
Senior Project Manager

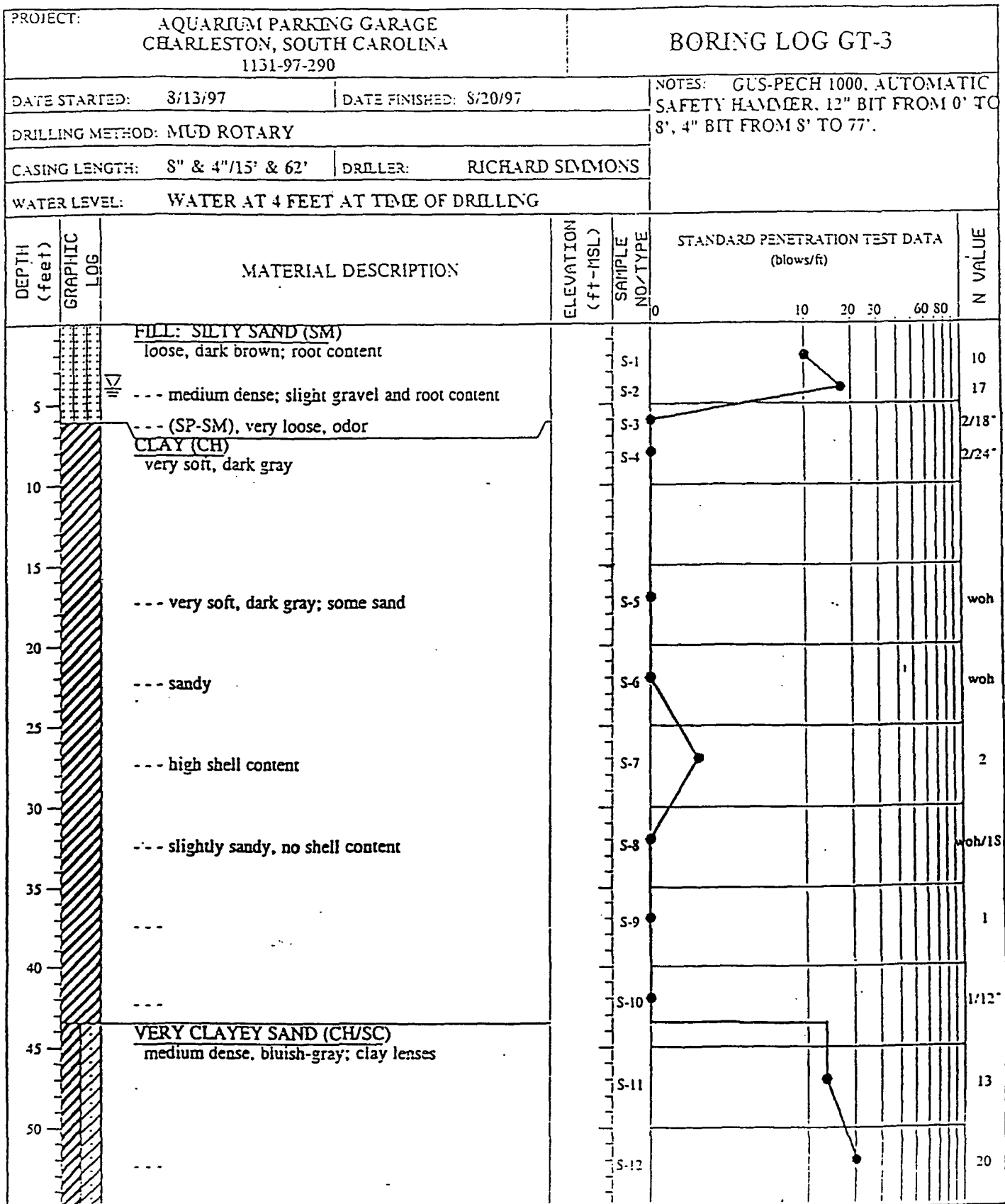
Attachments

cc: W. Motorwalla (SCE&G)  
G. Tucker (Keenan)

**FIGURE 1**  
**HYDRAULIC ELEVATOR LIFT**  
**PLAN LOCATION AND CROSS-SECTION**



**ATTACHMENT 1  
BORING LOGS  
BORING GT-03**



1. BORING AND SAMPLING IS IN ACCORDANCE WITH ASTM D-1586.
2. PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.



S & ME, INC.  
840 LOW COUNTRY BOULEVARD  
MT. PLEASANT, SOUTH CAROLINA

PROJECT: AQUARIUM PARKING GARAGE CHARLESTON, SOUTH CAROLINA 1131-97-290			<h2 style="margin: 0;">BORING LOG GT-3</h2>			
DATE STARTED: 8/13/97		DATE FINISHED: 8/20/97		NOTES: GUS-PECH 1000, AUTOMATIC SAFETY HAMMER. 12" BIT FROM 0' TO 8', 4" BIT FROM 8' TO 77'.		
DRILLING METHOD: MUD ROTARY						
CASING LENGTH: 8" & 4"/15' & 62'		DRILLER: RICHARD SIMMONS				
WATER LEVEL: WATER AT 4 FEET AT TIME OF DRILLING						
DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION (ft-MSL)	SAMPLE NO./TYPE	STANDARD PENETRATION TEST DATA (blows/ft)	N VALUE
					0      10      20      30      60      80	
60		--- loose, fine to coarse; w = 30% <u>CLAY (CH/MH)</u> stiff, greenish-gray; slight sand content	S-13		10	8
65			S-14		15	9
70		--- soft; sandy, some shell content  --- no visible shell hash	S-15		25	15
75		<u>COOPER GROUP: SILTY SAND (SM)</u> loose, olive, fine; calcareous <u>BORING TERMINATED AT 77 FEET</u>	S-16		10	4
			S-17		10	6

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S & ME, INC.  
 840 LOW COUNTRY BOULEVARD  
 MT. PLEASANT, SOUTH CAROLINA





Project Geotechnical Borings Owner City of Charleston, South Carolina  
 Location Calhoun Park Proj. No. 010030790-02  
 Surface Elev. \_\_\_\_\_ Total Hole Depth 77 ft. Diameter 12 in. to 4 in.  
 Top of Casing \_\_\_\_\_ Water Level Initial 4 ft. Static \_\_\_\_\_  
 Screen: Dia \_\_\_\_\_ Length \_\_\_\_\_ Type/Size \_\_\_\_\_  
 Casing: Dia 8 in. and 4 in. Length 15 ft. and 62 ft. Type Schedule 40 PVC  
 Fill Material \_\_\_\_\_ Rig/Core GP-1000  
 Drill Co. R. Simmons Drilling Method Mud Rotary  
 Driller M. Armstrong Log By E. Fox Date 08/20/97 Permit # \_\_\_\_\_  
 Checked By C. Wingerd License No. \_\_\_\_\_

See Site Map  
For Boring Location

COMMENTS:

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ X Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0						
2						Dark yellowish orange to moderate yellowish brown, loose, fine SAND, some medium sand and silt, moist.
4						Light gray CONCRETE, severely weathered.
6						Dark olive gray, very soft, gravelly CLAY, some sand and wood fragments, saturated, sheen, odor.
8						Dark olive gray, very soft, sandy CLAY, some organic plant matter, saturated, sheen, odor.
10						
12						
14						
16						Dark greenish gray (5GY4/1), very soft CLAY, trace fine sand, wet, no sheen or odor.
18						
20						Dark greenish gray (5GY4/1), very soft, fine SAND and CLAY, wet.
22						
24						



Project Geotechnical Borings Owner City of Charleston, South Carolina  
 Location Calhoun Park Proj. No. 010030790-02

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24			7			Dark greenish gray (5GY4/1), very soft CLAY, some large shell fragments, trace sand.
26						
28			8	WH/18"		Dark greenish gray (5GY4/1), very soft CLAY, wet.
30						
32			9	WH/12"		
34						
36			10	1/12"		Dark greenish gray (5GY4/1), very soft, CLAY, trace organic debris.
38						
40			11	WH		Dark greenish gray (5GY4/1), very loose, clayey, fine SAND, saturated.
42						
44			12	5		Greenish gray (5G6/1), medium dense, clayey, fine SAND.
46						
48			13	4		Greenish gray (5G6/1), loose, fine to coarse SAND, some gravel.
50						
52			13	4		Dark greenish gray (5GY4/1), medium stiff, fine SAND and CLAY, wet.
54						
56			13	4		



## Drilling Log

GT-03

Project Geotechnical Borings Owner City of Charleston, South Carolina  
 Location Calhoun Park Proj. No. 010030790-02

Depth (ft.)	Well Completion	PID (ppm)	Sample ID Blow Count/ % Recovery	Graphic Log	USCS Class.	Description  (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
56			13	4		
58				4		
60				3		
62			14	3		Dark greenish gray (5GY4/1), medium stiff, silty CLAY, trace sand and shell fragments, slight plasticity.
64				6		
66				7		
68				2		
70			15	7		Dark greenish gray (5G4/1), medium stiff, silty CLAY, slight plasticity.
72				8		
74				1		
76			16	2		Dark greenish gray (5G4/1), loose, fine to coarse SAND, some shell fragments, saturated.
78				7		Dark greenish gray (5G4/1), loose, clayey, fine SAND, saturated, H <sub>2</sub> S (rotten egg-like) odor.
80				1		
82				3		
84				3		
86			17	13		Moderate olive brown (5Y4/4), stiff, sandy SILT, slight plasticity, wet.
88						Boring terminated at 77 feet.